



# Observed Vs Expected mortality in Septic Shock Patients treated with CytoSorb: a Real-World Scenario from Single Center Experience



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## Introduction

Several studies have shown that the efficacy of hemoadsorption is highly dependent on key factors such as patient selection, timely initiation, and an adequate therapy duration. These factors are crucial because, when these parameters are met, patients typically experience noticeable hemodynamic improvement, including better circulation, stable blood pressure, and improved organ function. This improvement could, in turn, lead to a reduction in mortality rates, as the treatment helps address the underlying physiological disturbances that contribute to severe illness and death.

## Methods

We retrospectively evaluated 175 patients treated with CytoSorb®. For the entire population the admissions SAPS II score was 56 (IQR 48-65); the SAPS II score of Non Survivors (61, IQR 52-69) was significantly higher than in Survivors (53, IQR 45-59,  $p < 0,005$ ). Overall, 86 patients died (49%) in ICU.

## Results

The observed mortality (OM) was compared with the SAPS II-expected mortality (EM) either in the whole population of patients and in different subgroups (including early vs late starters, high vs low intensity patients, and early and high patients vs. late and low intensity patients); the OM was significantly lower than EM in the whole population (49% Vs 66% respectively;  $p = 0,048$ ), in high intensity patients (30% Vs 63%;  $p = 0,002$ ) and in early-starters/high intensity late starters (30% Vs 63%;  $p = 0,02$ ) (Table 1).

## Conclusion

Mortality in all patients treated with Cytosorb has been significantly lower than expected based on the SAP II score. This reduction in mortality has been particularly pronounced in two patient groups: patients who received high-intensity hemoadsorption therapy; patients with the combination of starting therapy early and using high-intensity treatment. In summary, data from studies have confirmed that early initiation and high-intensity Cytosorb therapy are associated with significantly lower observed mortality compared to predictions, emphasizing the importance of prompt and aggressive treatment in critically ill patients.

Table 1: Observed Versus Expected Mortality (%)

| Categories                             | Expected mortality (%) | Observed mortality (%) | p-value |
|----------------------------------------|------------------------|------------------------|---------|
| All (n = 175)                          | 66                     | 49                     | 0.048   |
| Early starters (n = 102)               | 66                     | 48                     | n.s.    |
| Late starters (n = 73)                 | 70                     | 51                     | n.s.    |
| High intensity (n = 90)                | 63                     | 30                     | 0.002   |
| Low intensity (n = 85)                 | 71                     | 69                     | n.s.    |
| Early starters-high intensity (n = 56) | 63                     | 30                     | 0.02    |
| Late starters-low intensity (n = 38)   | 74                     | 68                     | n.s.    |